ECE 517: Machine Learning

Assignment 7.1: Gaussian Processes

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GAUSSIAN PROCESSES

Using the GP software and the script provided with Video 7.4, reproduce the first example of lesson 7.3.

Gaussian Process.

This first example is in one dimension and the model that generates the data is:

$$y_n = 0.5x_n + 0.5 + w_n \tag{1}$$

Where x_n is a uniform random variable between 0 and 1, w is Gaussian noise with variance σ^2. The standard deviation is 0.5 and for the training, we take 50 samples from this linear model. For the test, we have 10 samples that are uniformly spaced between 0 and 1. In blue, we have the training samples with noise, and in black, we have the regression line with 10 points.

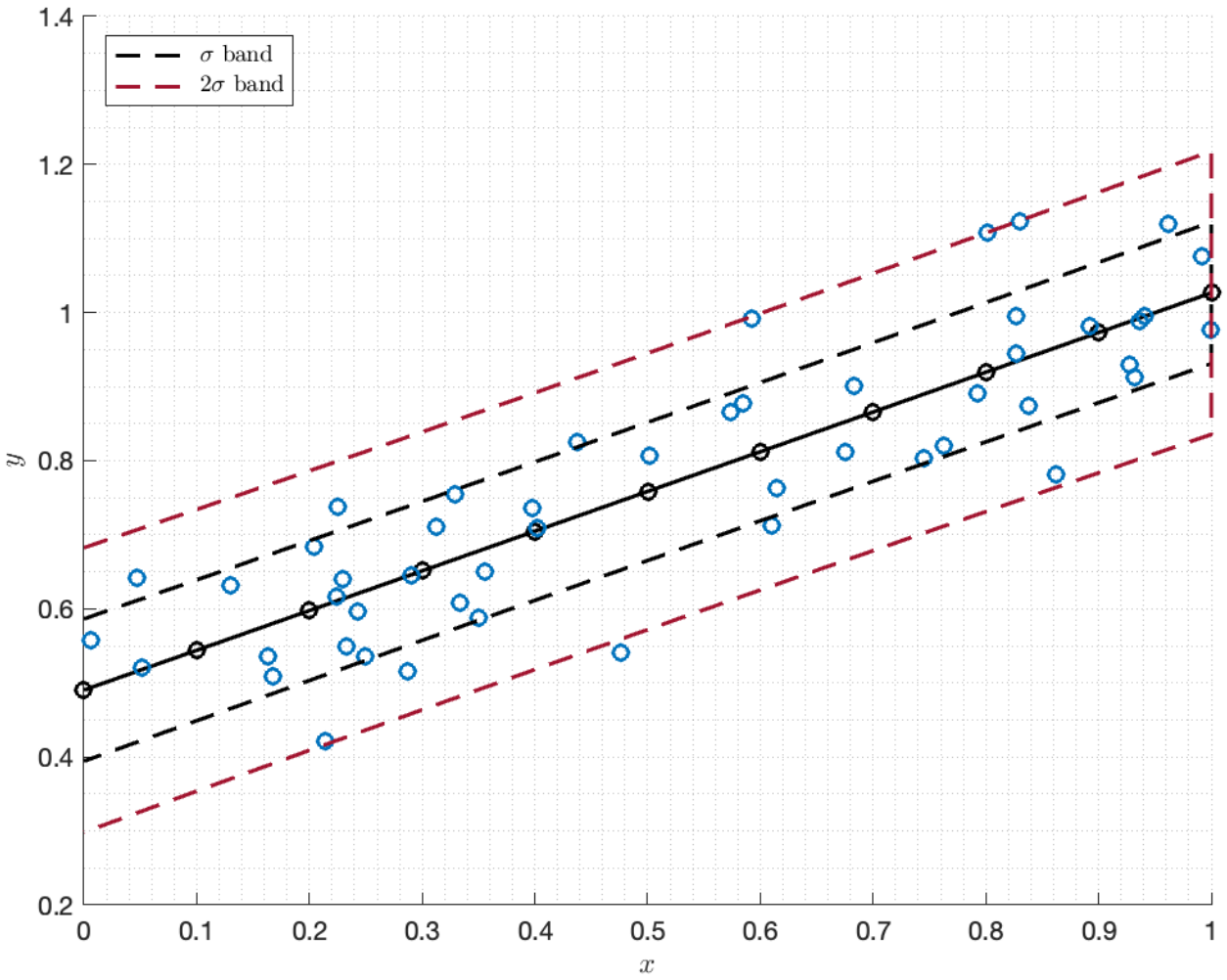

Figure 1: Linear GP regression over the linear model $y_n = 0.5x_n + 0.5 + w_n$.